

## Question

You are asked to design a water tank for the hydric system of your small town. The best shape to support the pressure of water is a sphere.

To maintain the correct flow in the pipes bringing water to the population, the amount of water in the tank must be kept as constant as possible and it must be equal to  $78 \text{ m}^3$  with a maximum uncertainty not exceeding  $1 \text{ m}^3$ .

What will be the diameter of the spherical tank, in order for it to hold  $78 \text{ m}^3$  of water?

What is the maximum uncertainty you can have on the diameter of the tank, in order to achieve a maximum volume uncertainty of  $1 \text{ m}^3$ ?

## Exercise

Write a general function that solves this question for any input water volume and any input maximum uncertainty on the volume. Assume  $\pi$  is perfectly known.